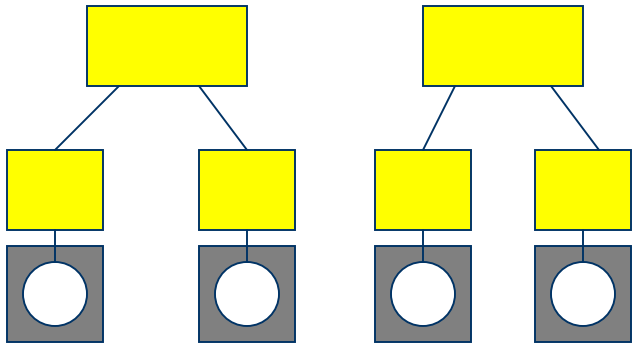
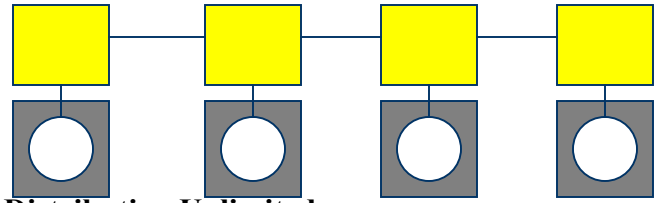
Distributed computer architectures

- Requirements:
  - Low power.
  - Low latency.
  - Small buffer memories.
- Architectural techniques:
  - Distributed processing with dynamic load balancing.
  - Application-specific network.
  - Power management system.

- Alternative network architectures:



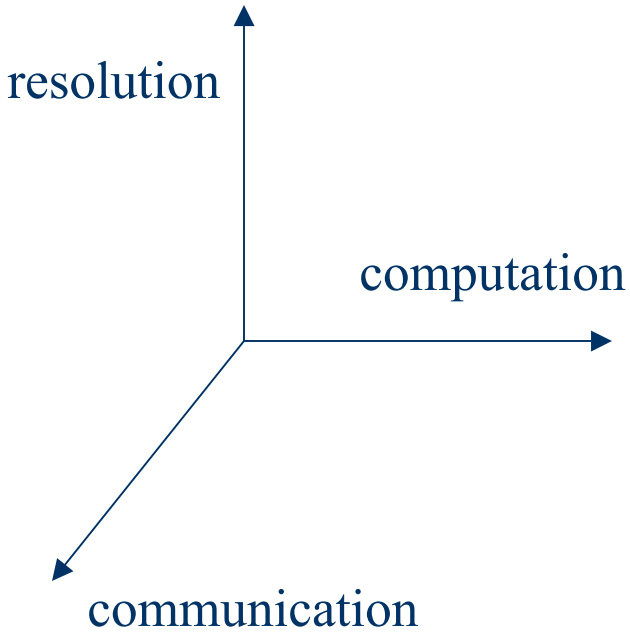
hierarchical



peer-to-peer

Low energy operation

- How to save energy: shut it down, slow it down.
- Architecture must support units that provide a range of energy/performance options.
- Power management system determines what units should be used.
  - Predictive schemes measure past user/environmental behavior, predict usage in the near future.



Algorithm/architecture co-design for low energy

- Trade off algorithmic qualities for energy consumption:
  - Spatial resolution
  - Temporal resolution
  - Desired features
  - Radiation band
- Trade off sensor and computer performance vs. energy consumption:
  - Software vs. hardware vs. optical foveation.